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ABSTRACT

Designed for secondary students, this interdisciplinary curriculum and resource packet provides opportunities to study maps and produce a map project. Objectives of the total curriculum and individual units describe the educational outcomes. Unit 1 activities and worksheets develop a strong foundation in map skills and the history of maps. Based on making maps and the meaning of maps produced, unit 2 is activity oriented. Unit 3 concerns the use of computers and new technology as a link to an ancient means of communication. Unit 4 offers 10 options to study and steps to complete the chosen option. Partial reference and contact lists provide further information and conclude the document. (CK)

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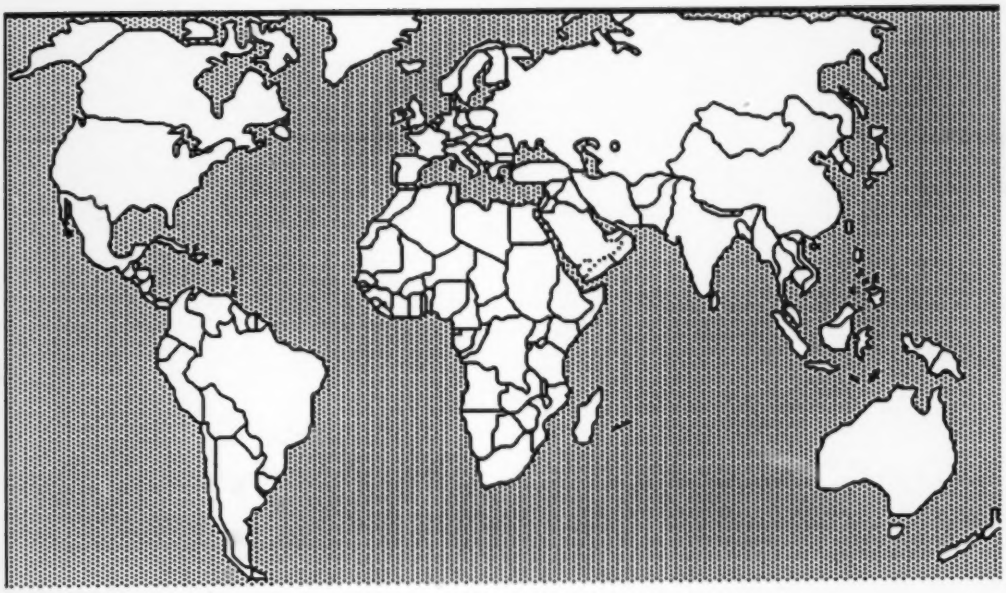
A WORLD OF

MAPS AND TRAVEL



An Interdisciplinary Curriculum and Resource Packet
Designed for Secondary Students

Center For Curriculum Development
Oak Hill High School
Wales, Maine

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
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Introduction to Maps and Travel

Do you like to travel, sail, mountain climb or just go for a ride in the car? Chances are the answer is yes. To do this people usually consult a map of some sort to give them the information about their possible route.

During the course of this project you will have an opportunity to study maps and produce a map project from the wide range of optional studies.

Remember

"Belief is the acceptance of the map and faith is taking the voyage"

Enjoy!

Can you name some of these countries before consulting a map?

Objectives for the Total Curriculum

To allow the user of this curriculum to better understand the purpose and use of maps.

To be able to further enhance the educational study of different cultures through the use of maps.

To be able to demonstrate through a finished project gained knowledge of maps and their uses.

To be able to compile data and maps to complete a final project.

To be able to demonstrate proficient use of a Macintosh Computer and the Hyper Atlas Program by completion of curriculum

At the end of the curriculum the student will be able to demonstrate and present project material to project Gro Committee and appropriate class.

Note to Student or user of curriculum

Units I, II, III must be completed in order, in their entirety. Each unit will be evaluated with mentor before proceeding to the next unit. Unit 1 is designed to gain a strong foundation in map skills and the history of maps. Unit II is activity oriented, based on making maps and the meaning of the maps you produce. Unit III concerns using the Macintosh computer and will allow you to use new technology as a link to an ancient means of communication.

Unit IV requires that you choose one of the ten options and complete all of the steps, then present your final project to the Project Grow Committee and to appropriate class. The entire evaluation process will include and require that:

1. You keep an ongoing folder for all parts of the curriculum

2. When required to write paragraphs or pages the final product will be produced and typed on the computer.

3. Take several short quizzes.

4. Neatness and clarity of maps produced by you

5. Presentation of final project.

Unit I Understanding Maps

A. Description

This unit is designed to begin your understanding of maps. You will be asked to read some general informative pages, watch several filmstrips, and do some basic map activities. Your understanding of this unit will help you throughout this curriculum. If you do not understand, go back and review and also ask for help from your mentor.

B. Objectives

1. The student will be able to demonstrate proficient use of maps by locating given points of reference.

2. The student will be able to define all cartographic terminology used throughout the curriculum.

3. The student will be able to correctly identify map symbols and their appropriate usage.

4. The student will be able to correctly answer evaluation questions to 90% or better proficiency.

C. Materials list for Unit 1 Understanding Maps

1. Provided atlas for map activities Use The Great Geographical Atlas by Rand McNally.

2. Folder for materials

3. Pen, pencil, paper (notebook)

4. Filmstrip projector

5. Filmstrips titled Exploring the World of Maps by National Geographical Society

   Red - The message of maps

   Orange - Using maps

   Blue - The round earth on flat paper

   Green - Surveying the earth

D. Activities for Unit I Understanding Maps

1. Read pages 98-103 in the provided atlas (The Great Geographical Atlas, by Rand McNally)

2. Worksheet #1 Vocabulary from reading

3. Worksheet #2 Questions from reading

4. Using the provided atlas - find all the different types of maps - give page number, type of map and a written description of the map's intended use.

5. Symbols - find the symbols page - study it - do the enclosed worksheet #3

6. Learning to locate points of references- do worksheet #4

7. View filmstrips #1-4 from Exploring the World of Maps produced by the National Geographic Society

8. Prepare a 1 page summary of each filmstrip

9. Turn in all written work for evaluation & discussion

10. Take quiz on unit

Activity from Reading (1) Worksheet #1

Reading part 5 Understanding maps (pgs. 98 -103)

Part 1. Vocabulary list - please define the following words from your reading. These terms will be used later to answer questions and help you develop your own map project

1. Cadastral
2. Diagrammic
3. Strip map
4. "Portolan" chart
5. "Pictorial" map
6. Gazetteers
8. Cartographer
9. Geographia
10. Photogrammetry
11. Centuriation
12. Prime Meridian
13. Latitude
14. Longitude
15. Chronometer
16. Projection
17. Orientation
18. Scale
19. Grid
20. Thematic Cartography
21. Symbols
22. Legend
23. Point
24. Line
25. Area
26. Unit
27. "Harchuring"
28. Contour
29. Hyposometric Tints
30. Coordinate

Activity (2) Worksheet #2

Questions from Reading Part 5 Understanding maps (pages 98-103)

1. What was the purpose of the United State Geological Survey?

2. The U.S. Geological Survey was not established until 1879 - why do you think it took so long after the founding of this country to begin the process?

3. Cadastral surveys were used by the Roman to determine what?

4. For what purposes were Portolan Charts used?

5. Man's perception of the world was expressed through what type of maps?

6. Describe in your own words how photogrammetry has improved the mapping in to-day's world.

7. Lines running parallel to the equator are called?

8. What four items provide the framework of a map?

9. Originally orientation meant the arrangement of something so as to face east - how is the word orientation used today?

10. How is scale depicted on a map?

11. Using the maps from your readings, find 3 maps that have scales and list the scale and map for which the scale is representative..

12. There are 3 types of symbols used on most maps - please list the types and give a description as to how the symbol is utilized on a map.

13. In your own words describe how terrain is depicted?

14. What is thematic catography?

15. What does a catographer's map have to convey to the using public?

Answer Key to Questions (for mentor's use only)

1. To undertake the topographical and geological mapping of the country.

2. (own opinion)

3. Land ownership and asses tax liability

4. Sailing along coastlines

5. Topographical

6. (own description) should include lasers, digital computers, satellites, manned space craft

7. Latitude

8. Projection, grid, orientation, scale

9. All map references are oriented toward north or magnetic north

10. Representative fraction, written statement or bar graph

11. 1:12,000,000 - Small Island Iceland - 1: 6,000,000 - Large Island Iceland - 1: 6,000,000 - Map of California

12. Point, line, area: Point denotes places, lines express connections, area - spatial phenomena like soil, vegetation, population, etc.

13. Should mention contours, elevation, shading

14. Emphasis on a theme of one or 2 elements

15. An objective picture of reality

Symbols worksheet #3

1. In how many different languages is the symbols page presented? What are they?

2. Why are scales given in both English and Metric units of measure?

3. Describe the differences in transportation symbols.

4. Which kind of map will contain the symbols in the first column on page 114?

5. Which kind of map will contain the symbols on page 115?

6. There are 2 other pages of symbols - where are these pages located?

7. How do these symbols differ from each other?

8. How do the symbols differ from the first set of symbols you were studying?

9. Go out on the football field and, using the symbols from page 114, make a map of what you see.

10. Draw a map from school to your house and from school to the new Shop & Save on Sabattus Street, by using the symbols on page 115.

Answer Key (for mentor's use only)

Symbols Page Activity Worksheet #3

1. 5 - English, French, German, Italian, Spanish

2. Because metrics is universal. English for those countries who only use it.

3. Railway (Primary / secondary), Expressway, Road, Trail, Caravan, Ferry, Shipping lane

4. Physical

5. Political

6. pg. 273 A-26

7. United States - Canada

8. International systems

9. Produced map

10. Produced map

Location Activity

Description

Utilizing Rand McNally's "The Great Geographical Atlas" - you will begin to focus on locating and plotting points on various maps. When you are doing the following page of activities, consider the following:

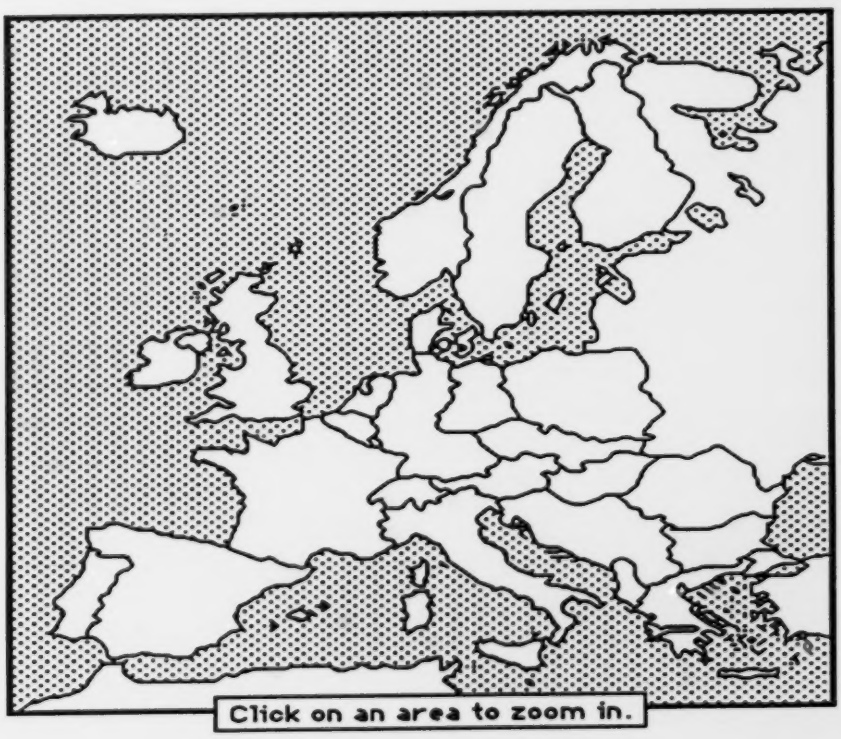
1. Make note of the scale and what it represents.

2. Be sure you know the difference between physical and political map.

3. Utilize your vocabulary list for a refresher and correct terminology.

4. Take your time and be precise *Remember a fraction of an inch could mean many miles lost.
5. If confused with symbols and their usage, please refer back to the symbols page

Have fun with this activity and dream of the adventures these maps could hold in store for you.



Location Activity Worksheet #4

Please answer the following questions. Be accurate and double check every junction point. Give page number of each map you utilize to answer the question.

1. Locate the physical map of Europe

2. After locating the map of Europe, locate 4 sand areas. Please give map reference letters and name of each area.

3. Locate the political map of Africa.

4. After locating the political map of Africa, find the longest trail caravan route in Libya. Give the names of the end points of route.

5. Locate the time zone map

6. By using the time zone map, determine how many hours difference between your home and the prime meridian?

7. By using the time zone map, determine what the little " " represent on this map

8. By using the time zone map, what does the green area of Australia mean on the time zone map?

9. Locate the map of the South Pacific

10. Using the map of the South Pacific, what do the numbers mean in the middle of the southwest Pacific basin?

Answer key for Location Activity Worksheet #4

1.j Page 126-127

2. Grand Occidental J - F - G
   Grand Oriental J - G
   An Nafud J - J - K
   Karakumy H - L - M

3. pg. 176-177

4. Hon Ayn al Ghaza
I
5. pg. 124-125

6. 5 hours

7. The flow of Ice Bergs

8. Odd # of hour 9 1/2 from Mean Time

9. pg. 232-233

10. Approximate depth of ocean floor

Unit II Making of maps

A. Description of unit

The making of maps is an art. It takes time, knowledge and precision of the tool to be effective as a map maker. In this unit you will have an opportunity to make maps, learn about the history of catography, catography as a career, and plan a trip to various map makers.

Remember "Precision is a key to accuracy"

B. Objectives of unit

1. The student - through the use of a map making kit, will be able to produce a workable map from a globe.

2. The student will be able to demonstrate knowledge of catography through his written work.

3. The student will demonstrate proficiency in the use of transparencies by making and providing transparencies of 3 countries for use in World Culture class.

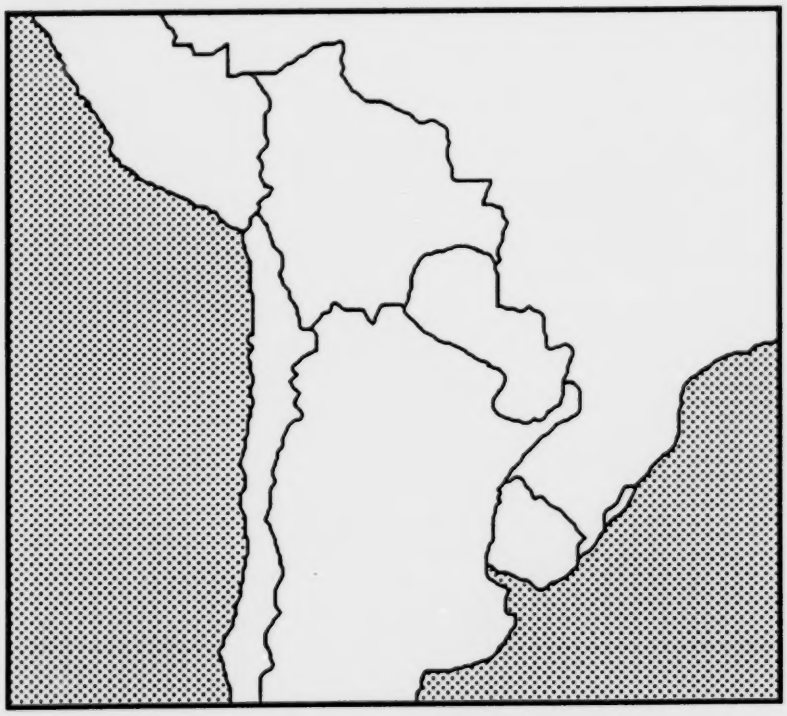
4. The student will contact at least 1 catographer and provide documentation of interview.

5. The student will plan and carry out a trip to Delorme's (of Freeport, Maine) and give accurate written account of the trip.

C. Material for Unit II Making of Maps

1. Curriculum folder
2. Pen, Pencil, Paper
3. Map making kit (see mentor)
4. Transparency Kit and Markers (see mentor)
5. Provided Atlas
6. Provided Globe
7. Film strip projector
8. Film strip titled Making of maps #5

Can you name these countries?



D. Activities for Unit II

1. View filmstrip #5, Making of Maps, from the National Geographic Society Series.and write a 1 page summary

2. Research - What is Catography. Give the history, description and career options . Write at least two pages as a minimum on this report.

3. Use the Map Making Kit and do the activities enclosed in the kit.

4. Learn how to make transparencies for overhead projectors. See your mentor for help and materials.

5. Produce three usable transparencies for use in your World Cultures class.

6. Write letters to the National Geographic Society catographers department, an armed forces catographer, and also a local catographer. Be sure your letters are in an acceptable business format and typed on school stationery.

7. Contact Delorme's Map Making in Freeport, Maine to arrange a possible tour of their facility.

8. Turn in all materials to your mentor for evaluation.

9. Take a short quiz over the unit.

Unit III Use of the Macintosh Computer

A. Description

This unit is designed to help you learn and understand the Macintosh Computer and Hyper Card Atlas. You will be required to take a MacTour then do some computer activities using the provided Atlas Disc. It is the intent of this unit to give you a basic understanding of the importance of the computer in the making of today's maps - also this unit will be reviewed and utilized during Unit IV, your optional project.
**(Note This unit will be done in Room 111)

B. Objectives for Unit III Use of Macintosh Computers

1. To be able to demonstrate proficient understanding of the Macintosh Computer.

2. To be able to demonstrate proficiency in the Hyper Card Atlas.

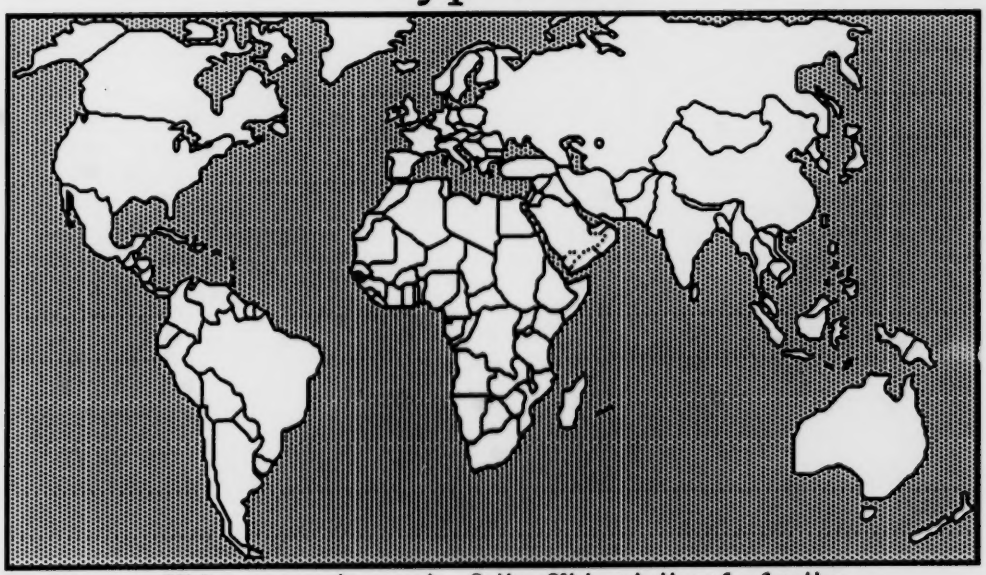
3. To be able to apply prior knowledge of maps & map making to design and file Hyper Cards.

4. To be able to produce, at the end of Unit IV, a workable product from the Macintosh Computer.

C. Materials List for Unit III

1. Curriculum folder
2. Pen, pencil, paper
3. Provide Mac Tour Disc
4. Provide Hyper Card Atlas

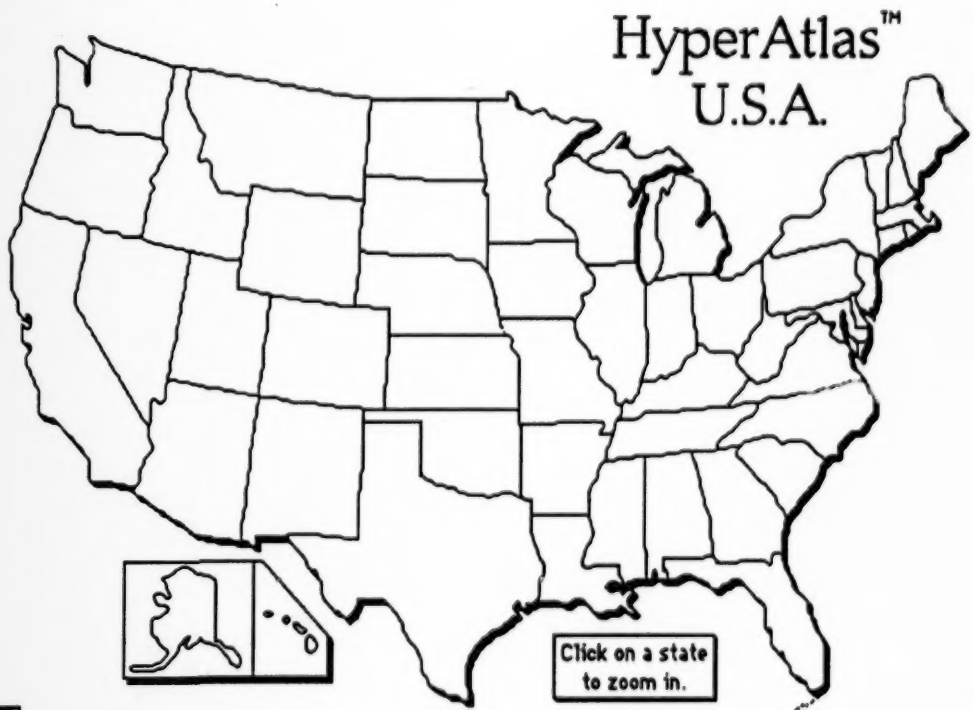
HyperAtlas™



Click on an area to zoom in. Option-Click on buttons for function.

D. Activities for Unit III MacComputer
(All activities in Room 111 - be sure to sign up for time)

1. Do Mac Tour
2. Basic learning of Hyper Card Tour
3. Hyper Atlas
4. Evaluation with Mr. Fuller & mentor



Unit IV Mapping Option

A. Description of Unit IV Mapping Options

This unit is designed for you to be able to actively concentrate on a particular theme. All the mapping activities and knowledge you have already gained will be needed here to produce a final project.

Remember - "Charting out your adventure is vital to its success"

Good luck and have fun!!

B. Objectives for Unit IV

1. The student by the end of a given option will be able to produce a workable map and explanation of its usage.

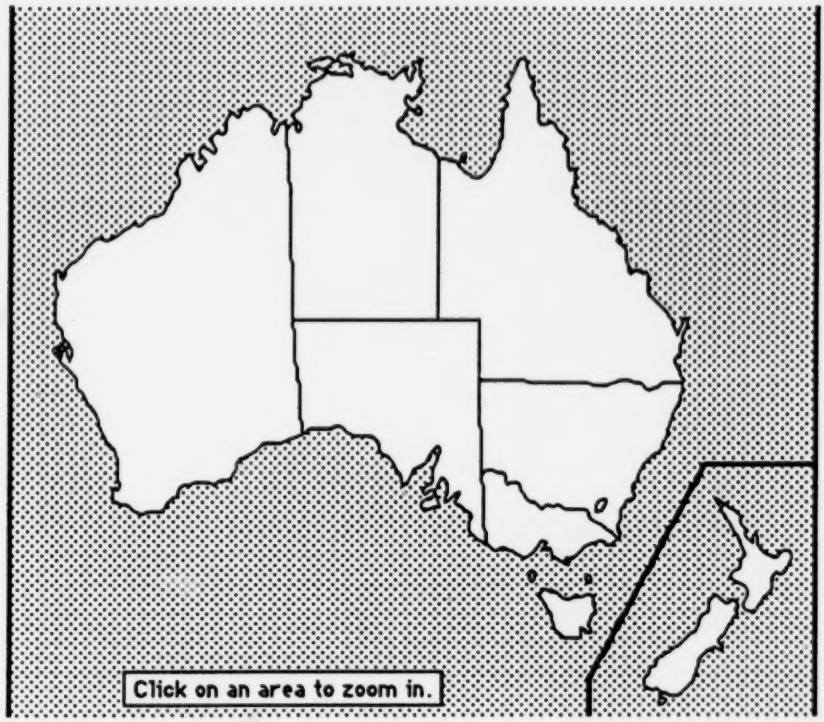
2. Through the use of a time zone map and other maps the student will be able to calculate time throughout the given map project.

3. The student will be able to calculate mileage between any two given points and demonstrate accuracy on map project.

4. The student will be able to understand and demonstrate superimposing of one map onto another.

C. Materials needed for Unit IV

1. Curriculum folder
2. Provided Atlas
3. Pen, Pencil, paper
4. Any makers, posterboard for specific projects (seen mentors)
5. Any materials specified in particular options



D. Activities for Unit IV

- Options-

Option 1 - World Exploration

Find 2 places of interest to you, on each continent, at least 1000 miles apart. Then complete the following project.

Activities

1. Map a feasible continuous route, to each point of interest, calculating and marking exact distances between points.

2. Write an explanation of why you choose the particular point of interest.

3. Determine the time differential from your starting point to each area chosen.

4. Determine elevation changes and chart them on your map for each point chosen.

5. Explain how you would travel from each location to the next and why.

6. What would you do for activities at each location? Make a list of possible social and recreational activities.

7. Figure the cost of the trip - be sure to account for monetary exchange rates.

8. Prepare a clothing list for your trip - check climate charts.

9. Present your final completed project to committee and appropriate class.

Option #2 Tour Host

Ever thought of being a tour host? Well, here's your chance. Prepare a travel package. Choose any foreign country or geographical area and do the following:

1. Trip length 10 days - provide a time table for entire trip.

2. What do the tourists need for clothing, and explain how they will travel.

3. Research tourist restrictions and requirements for travel in a foreign country. Example - passports, etc.

4. Determine through maps - distance and travel time from one location to the next.

5. Make a workable - exciting map for the tourist.

6. Provide a list of points of interest with historical background.

7. Write to the ministry of tourism of the area you have chosen.

   **Please use school stationery and professional letter writing style.

8. Design a tourist brochure with map included to advertise your trip.

9. Present your total project to committee and appropriate class.

Option #3 Sailing or Ocean Cruises

Are you interested in sailing or an ocean voyage? Well, here's your chance to prepare and dream of a nautical adventure. Choose any one of the following areas:

A. Rim of Pacific Ocean
B. Rim of Atlantic Ocean
C. Rim of Indian Ocean
D. Mediterranean Sea

then please do the following activities:

1. Determine what nautical vessel or vessels you will use on your trip.

2. Collect or find nautical maps of your chosen area.

3. List types of clothing and equipment you might need.

4. How long will each leg of your journey be, what ports will be your stopovers? Please chart this on a workable map.

5. What countries or land areas border your chosen area?

6. What are some possible concerns and or restrictions a sailor may need to be aware of?

7. Give some historical background, of points of interest, along the intended course.

8. Write to various sailing or nautical organizations to help you with your travel plans "Perhaps the Navy"

9. Make a final workable map and be able to graphically display distances, time changes, ports of call for each leg of your journey.

10. Present your total project to committee and appropriate class.

Option #4 Mountain Adventure

Have you ever dreamed of how high you could climb? Your project is to map the highest summit on each continent and do the following:

1. Read the book Seven Summits by Dick Bass & Frank Wells. Then prepare a minimum two page book report. (See your mentor for the book.)

2. Utilizing information from the book and numerous maps locate the given summits then make a travel map from your home to the top of each summit. Be sure to calculate all distances traveled.

3. List all methods of travel you will utilize to reach the summits.

4. Prepare a list of appropriate clothing and equipment.

5. Find maps that will help you determine elevation changes you will encounter from your home to top of each summit.

6. Utilize time zone maps to determine time differentials between your home and all seven summits.

7. Interview Miss Haskell about her trips to Russia & Switzerland. Interview, if possible, L.L. Bean's president and other climbers who climbed Mt. Everest.

Prepare minimum 2 page reports of your interviews.
** If possible, set up a night for interested people to view slides or talk with these climbers. Work through the Outing Club.

8. Present your total project to committee and appropriate class.

Option #5 Orienteering

Like the challenge of maps, compasses and running? Here is a way to begin to understand the fun of orienteering.
Please do the following:

1. Write a minimum 2 page paper on the history of orienteering.

2. Map making basic activities
   a. Make a map of the room you are in right now.
   b. Make a map of the inside of the school and your house
   c. Make a map of the outside of the school and your house.
   d. Make a map of the school grounds including all property lines and physical features.

3. Compass Basics.
   a. Complete the enclosed compass rose (Activity worksheet #1)
   b. Perform a three leg walk - both in the open and woods (Activity worksheet #2)
   c. Demonstrate to mentor your total understanding of the functions and parts of the compass (compass is provided)

4. Briefly look through the book Orienteering - Instructor's manual. This will be your guide to aid you in the remaining assignments. (See your mentor for the book.)

4a. After you have familiarized yourself with the terms and setup of the book go back to your original maps and write a comparison page paper utilizing your maps and the maps outlines in this book.

5. Make 20 control markers

6. Make an orienteering map of school grounds for use by 9th grade physical education classes.

7. Practice your course after setting control markers, then set a course time.

8. Present your course and basic instruction to Mrs. Sherman's 9th grade classes.

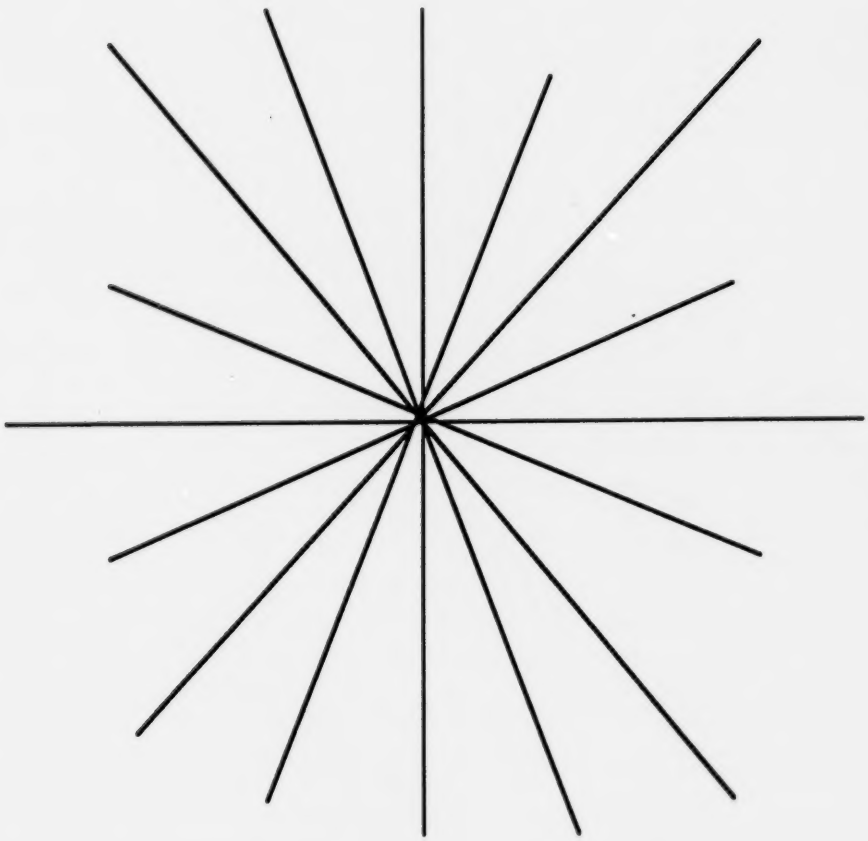
9. Contact Bates College orienteering club and go to one of their meets.

10. Present your total project to committee.

Option #5 Worksheet #1
Compass Rose Activity

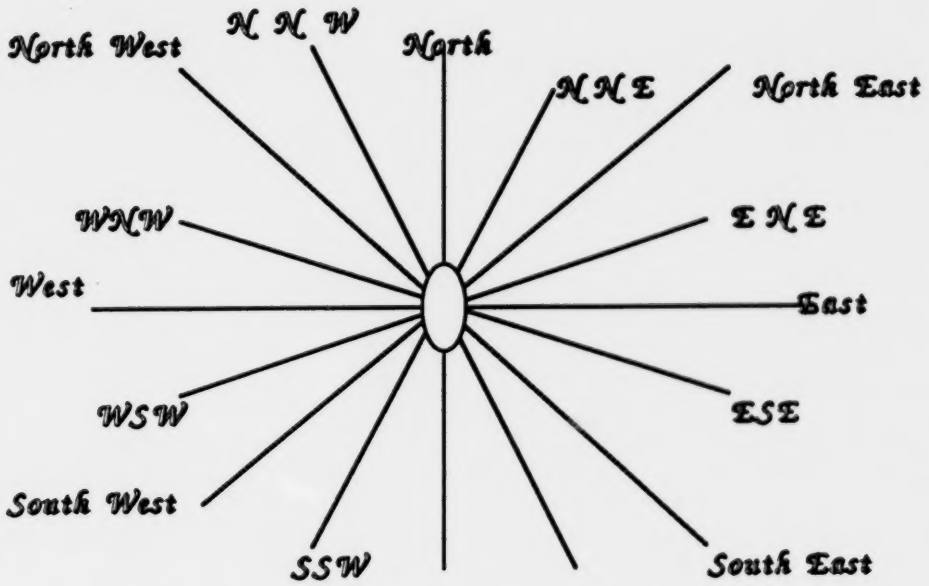
Name

Date



Fill in the sixteen points of the compass and the degree reading of each point.

Answer Key for Compass Rose Activity -Activity Worksheet #1 (For mentors use only)



Option #5 Worksheet #2

Name

Date

Orienteering Worksheet: Three-Legged Walk

1. Put a nickel or quarter at your feet.
2. Choose any bearing between 0 - 120 degree
3. Look up and choose a landmark directly in the line of direction and your degree.
4. Walk 40 steps without looking at our compass toward your chosen landmark.
5. Look at your compass again - Add 120 degrees to get your next bearing.
6. Reset compass housing so line of direction touches your new bearing.
7. Pick a landmark - walk 40 steps.
8. Add another 120 degrees.
9. Reset your compass housing.
10. Walk forty steps and pick up your coin.

1st bearing _____ 1st landmark _____

2nd bearing _____ 2nd landmark _____

3rd bearing _____ 3rd landmark _____

A. Did you set your bearing with line of direction arrow each time?

B. Did you add 120 degrees each time?

C. Did you walk exactly 40 steps?

D. Did you find your coin? (Be honest) If not, how far off were you?

Option #6 Historical Battles

Are you really intrigued with historical battles? Try this one. Choose any battle or conflict before the year 1700 and do the following:

1. Give a written (2 page minimum) account of the chosen historical battle.

2. Prepare a working map of the battle's geographical area.

3. Take a modern map and superimpose your battle map onto it.

4. Determine which countries, states etc. would be involved today should this conflict reoccur.

5. How have modern inventions changed the nature of the battlefield?

6. What are the differences between how the battle was fought and how it might be fought today.

7. List the equipment that a soldier or warrior had in your chosen battle, and compare it to what a soldier would have now.

8. Calculate the geographical distances that the battle covered during the entire conflict (place this information on a map)

9. Calculate the elevation and climatic changes that would have affected the conflict. (Prepare a map containing this information)

10. Present your total project to committee and appropriate class.

Option #7 - Lewis and Clark Expedition

Frontier Exploration - Retrace the Lewis & Clark Expedition by doing the following:

1. Write a one page biographical sketch of each explorer (Lewis - Clark)

2. Make a map of the entire exploration - chart and calculate distances and time differentials.

3. Superimpose exploration map onto a modern map.

4. If you were to retrace, through reenactment ,the Lewis & Clark route, what complication might you encounter.

5. Research to find out if there are any museums near the expedition route. If so, write to them for information about tourism. Are people today interested in these frontier explorers, etc.?

6. Make up a list of supplies that the expedition might have had. How many of the supplies can be made, or draw to show style (and usage). Recreate when Whenever possible.

7. How far is it from your home to the starting point of the expedition?

8. Compare the methods of travel from then to now. (written and visual)

9. Calculate geographically - Land and water formations with elevation changes that the route traveled over.

10. Present your total project to committee and appropriate class.

Option #8 Revolutionary War

If the Revolutionary War intrigues you, try this project. Please do the following: Retrace through maps the tri-state march of the Minutemen to Concord, Massachusetts. This activity will require you to use maps of Maine, New Hampshire and Vermont.

1. Determine if there were Minutemen who mustered and marched to Concord - from Maine, New Hampshire and Vermont.

2. Write to the Chamber of Commerce of Concord, Massachusetts to see if they can help you locate research material.

3. Research to see if any were from Litchfield, Sabattus or Wales.

4. Make a map, from your research, of the route they marched to get to Concord, Massachusetts.

5. Superimpose that map onto a modern map of New England.

6. Calculate distances and how long the march might have taken.

7. What gear did these men carry with them.

8. If you were to reenact the marches of these men, what towns or cities would you travel through, and what complications might you encounter along the way.

9. Prepare a final report and maps for presentation to committee and appropriate class.

Option #9 Underground Railroads

Does the secrecy and suspense of the Underground Railroad intrigue you? Then this is the place to start. Please do the following:

1. Read a biography about Harriet Tubman and prepare a 2 page minimum written book report. (See your mentor for the book.)

2. Use additional information from "Uncle Tom's Cabin" and a biography about Frederick Douglas to help with the remaining part of this project.

3. Make a map of all the routes of the underground railroad.

4. From this map, define the most used to the least used routes.

5. Superimpose your route map onto a modern map of the 1990's.

6. What complications might the underground railroad have today along their routes that they didn't have in the 1800's.

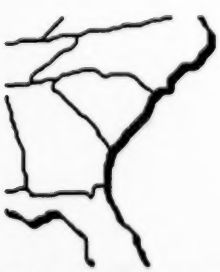
7. Calculate, from farthest to least, distances the fugitives traveled to be free.

8. Write a brief (2 page minimum) report on how the underground railroad worked.

9. If you were to operate an underground railroad today for the same purpose of freedom, how would it work?

10. Are there any underground railroads elsewhere in the world?

11. Present your project to committee and appropriate class.



This is a geographical map of the area of the United States used at the beginning of the Underground Railroad.

Option #10 Railroads of the United States

Are you a railroad buff who enjoys traveling the rails? Try this one!

1. Find out and list all the railroads that operate in the United States.

2. Make a map for each major railroad company.

3. Take two of the major railroads and write a brief history, (2 page minimum), to include also historical maps of the railroads' earliest beginnings.

4. How were the railroads originally laid out?

5. Make a map or pictorial graph of the elevation a train can travel over.

6. Contact Channel 10 about the railroad travels series around the world.

7. Take a trip to the Trolley Museum in Kennebunkport. Ask about history, railroad track laying. Write a 2 page report on your findings. (Be sure to call first to see when they could accommodate you)

8. Make a model or mockup of a track layout when a new track was about to be connected.

9. Present your project to committee and appropriate class.

Partial References

- Atlases -

Hamnan - The Times Conscise Atlas of World History, 1988

Rand McNally - The Great Geographical Atlas - 1985 printing (Basic Text Atlas)

- Books -

Bass - Wells - Seven Summits

Cunliffe - Celestrial Navigation

Gilchrist - Lee - Orienteering - Instructor's Manual

K. Jellstrom - Be expert with map and compass

McKower - Map Catalog

Partial Contact List

SCHOOLS

University of Maine, Farmington, Maine

University of Maine, Orono, Maine

University of Southern Maine, Portland-Gorham, Maine

RESOURCE LIBRARIES

Map Library - University of Connecticut

Map Link - New England Rep - Esno R Bonebakker, 317 Spring St., Portland, Maine

State Geography Consultant, State House, Augusta, Maine

State Library, Augusta, Maine

OTHER CONTACTS

Brunswick Naval Air Base, Brunswick, Maine

Delorme of Freeport Maine

Foreign Ministry of Tourism

Historical Societies

L.L. Bean, Freeport, Maine

Trolley Museum, Kennebunkport, Maine